

What is claimed is:

1. A method of providing copy protection of signal material transmitted via digital delivery networks, to prevent unauthorized viewing or copying of the signal material, comprising the steps of:

supplying copy protection controls indicative of desired copy protection for the signal material;

transmitting commands derived from and in response to the copy protection controls which activate the copy protection for the signal material; and

applying anticopy waveforms to the signal material in response to the commands to prevent the unauthorized viewing or copying of the signal material.

2. The method of claim 1 wherein the step of supplying includes:

establishing selected requirements for activating and controlling a process which enables said copy protection and which reports the corresponding usage thereof; and

providing copy protection control software in response to the selected requirements, which software provides said copy protection controls to activate and control the copy protection process and the usage reports.

3. The method of claim 2 wherein the step of establishing includes:

establishing requirements which differentiate between digital-to-digital and digital-to-analog copy protection conditions, which determine a copy protection process operating mode and configuration, and which ensure that there is only authorized access to the copy protection process.

4. The method of claim 2 wherein the step of providing includes:

generating the commands in the form of a bit pattern in response to the copy protection control software; and

said commands including a first bit pattern which enables real time on/off/mode control, and a second bit pattern which determines a programmable copy protection configuration.

5. The method of claim 4 including the step of:

receiving the transmitted first and second bit patterns to activate the copy protection and to control and reconfigure the copy protection process respectively in response thereto; and wherein the anticopy waveforms are applied to the signal material to provide the copy protection.

6. The method of claim 2 including the step of:

limiting access to the steps of establishing and providing to prevent unauthorized access to the application of the copy protection process or to the copy protection control software which activates and controls the process.

7. The method of claim 2 wherein the step of applying includes:

storing the copy protection controls in memory at a service provider receiving facility; and

storing control data in memory at a signal material receiving facility, which stored control data is responsive to the commands to activate, control and reconfigure the stored copy protection process.

8. The method of claim 2 including the step of:

collecting periodic copy protection activity information including copy protection activation status such pay-per-view and pay-to-tape number of signal material events watched.

9. The method of Claim 8 including the steps of generating reports which include the number of accessing receiving facilities, the rights holder of the signal material events, the number of total events watched, and corresponding billing information.

10. The method of claim 2 wherein the step of applying includes:

modifying a selected synchronizing signal in a corresponding blanking interval of a television line in response to said commands to degrade a subsequent

decoding of the synchronizing signal in the event that a recording is made of the corresponding signal material.

11. The method of claim 2 wherein the signal material is a video analog or digital signal.

12. Apparatus for controlling copy protection of proprietary signal material transmitted via digital delivery networks, wherein a service provider enables a copy protection process which prevents unauthorized copying of the signal material by consumers, the apparatus comprising:

a control/billing center for supplying copy protection control signals as directed by the service provider;

means for transmitting selected commands in response to the copy protection control signals to selectively control the copy protection process; and

means located with each consumer for applying the copy protection process to the signal material in response to the transmitted selected commands to prevent or allow viewing or copying of the signal material.

13. The apparatus of claim 12 wherein the copy protection control signals of the service provider include:

a mode command for activating the box means; and

a configuration bit pattern for determining the copy protection process's operating configuration.

14. The apparatus of claim 13 wherein the copy protection control signals include an access password for identifying that a service provider's authorized personnel have access to and control of the copy protection process.

15. The apparatus of claim 13 wherein the box means includes a set-top box having encoder means containing a copy protection circuit adapted to add anticopy signals to the signal material in response to the command signals.

16. The apparatus of claim 15 wherein the set-top box includes: memory means for storing the copy protection configuration and/or copy protection mode; and said encoder means including means for receiving the mode command and the configuration bit pattern and for controlling the activation and configuration of the stored copy protection process in response to the command and bit pattern.

17. The apparatus of claim 15 wherein the set-top box includes software for returning usage data back to the service provider's control/billing center, said usage data being used by the service provider to bill the consumers and to provide a report of the usage and corresponding license fees.

18. The apparatus of claim 13 wherein the signal material is a pay-per-view or pay-to-tape video analog or digital signal.

19. The apparatus of claim 12 wherein the control/billing center includes: instructional information establishing requirements for activating and controlling the copy protection process and for reporting the copy protection activity; and

wherein the service provider supplies copy protection control software commensurate with said requirements, and said copy protection control signals in response to the control software.

20. A method of providing copy protection of signal material transmitted via a digital delivery network, wherein a service provider enables a copy protection process via a set-top box located at a consumer's facility, comprising the steps of:

supplying selected control bit patterns from the service provider to the consumer's facility via the digital delivery network;

storing a copy protection configuration in the set-top box;

receiving the control bit pattern in said set-top box; and

applying the copy protection process to the transmitted signal material in response to the control bit pattern each time a selection of the material is made at the consumer's facility to prevent or allow the selected signal material to be copied.

21. The method of claim 20 wherein the step of supplying includes:

developing copy protection control software which describes selected control signals for applying the copy protection process to the signal material and for returning to the service provider usage data indicative of the signal material selected at the consumer's facility;

generating said selected control bit patterns in response to the copy protection control software; and

transmitting said selected control bit patterns to the set-top box of the consumer's facility when the consumer joins the delivery network and thereafter on a prescribed routine basis.

22. The method of claim 21 including the steps of:

storing in the set-top box copy protection application software which activates and controls the copy protection process; and

enabling the stored application software in response to the transmitted control bit pattern to selectively activate and/or modify the configuration of the copy protection process.

23. The method of claim 22 including the steps of:

modifying the configuration control bit pattern commensurate with a desired change in the copy protection process; and

transmitting the modified configuration control bit pattern to the set-top-box to effect the change in the copy protection process.

24. The method of claim 21 including the steps of:

storing consumer information in the set-top box which is indicative of viewing and/or copying options desired at the consumer's facility; and

comparing the control bit pattern to the stored consumer's information in the set-top box when a selection of the signal material is made to determine if the consumer is authorized to view only and/or to copy the material.

25. The method of claim 20 wherein:

the signal material is a pay-per-view (PPV) or pay-to-tape (PTT) signal; and  
the step of supplying includes establishing selected requirements for activating and controlling the PPV and PTT copy protection process and for reporting the corresponding usage activity of the process to the service provider; and

providing copy protection control software in response to the selected requirements, which software provides said control bit pattern to activate, control and modify the PPV and PTT copy protection process.

26. The method of claim 25 including the step of:

providing limited access to the steps of establishing and providing to prevent unauthorized access to the control of the copy protection process or to the copy protection control software.

27. The method of claim 25 wherein the signal material is a pay-per-view or pay-to-tape video analog or digital signal.

28. The method of claim 27 wherein the step of applying includes:

modifying a selected synchronizing signal in a corresponding blanking interval of a television line in response to said control bit pattern to degrade any subsequent decoding of the synchronizing signal when an unauthorized attempt is made to view or copy the pay-per-view signal.

29. A method of providing copy protection of signal material transmitted via a digital delivery network, wherein a service provider enables a copy protection process via set-top boxes located at consumers' facilities, comprising the steps of:

establishing selected requirements for activating, controlling and modifying a copy protection process for the signal material and for reporting the corresponding usage thereof;

providing copy protection control software in response to the selected requirements;

generating via the control software, mode and configuration control bit patterns which enable real time on/off mode control and programmable copy protection process configuration control respectively;

transmitting the mode control and configuration control code words to the set-top boxes;

selectively applying the copy protection process to the transmitted signal material in response to the transmitted mode bit pattern each time a selection of the signal material is made via the set-top boxes to prevent or allow the selected signal material to be viewed or copied.

30. The method of claim 29 including the steps of:

storing the application software in the set-top boxes; receiving and writing the mode bit pattern in the set-top boxes; and

wherein the stored application software responds to the transmitted mode bit pattern to activate, control and modify the copy protection process as defined by the configuration control bit pattern.

31. The method of claim 30 wherein the set-top box is functionally locked including: downloading via the service provider a selected bit pattern or software adapted to functionally unlock the set top box.

32. The method of claim 30 wherein the set-top box is functionally locked including activating at the service provider's facility selected software adapted to functionally unlock the set-top box